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THE EXPERIMENTAL METHOD AND SOCIOLOGY

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THE THEORY AND PRACTISE OF THE EXPERIMENTAL METHOD

SINCE the time of Comte, sociologists have been searching for a method to apply to the data of society which would yield as positive results as those attained in the realm of physical science. The experimental method has contributed in large measure to the striking achievements of modern science. This method allows us to analyze out relations of cause and effect more rapidly and clearly than by other methods. It permits verification by many observers. It has substituted for unreasonable prejudice a definite sort of proof that has attained sufficient certainty to justify prediction.

Experiment is simply observation under controlled conditions. When observation alone fails to disclose the factors that operate in a given problem, it is necessary for the scientist to resort to experiment. The line between observation and experiment is not a sharp one. Observation tends gradually to take on the character of an experiment.¹ Experiment may be considered to have begun when there is actual human interference with the conditions that determine the phenomenon under observation.²

The fundamental rule of the experimental method is to vary only one condition at a time and to maintain all other conditions rigidly constant.³ There are two good reasons for this procedure: in the first place, if two conditions are varied at one time and an effect is produced, it is not possible to tell which condition is responsible, or whether both have acted jointly; in the second place, when no effect ensues, how can we tell which condition is responsible, or whether one has neutralized the other?⁴

Specific illustrations from the fields of physics, botany and psychology may serve to bring the principle to mind. Newton desired to prove the "equal gravitation of all substances." Since the resistance of the air to pendulums of different bulk and shape varied, it was necessary to reduce this condition to a constant factor before the single force of gravitation could be observed. The desired end was accomplished by the construction of hollow pendulums of equal boxes of wood and of iden-

¹ Westaway, F. W., "Scientific Method," 1912, pp. 196-197.

² Bosanquet, "Logic," Vol. II., pp. 144-145.

³ Westaway, *op. cit.*

⁴ Jevons, S., "Principles of Science," p. 423.

tical outward size and shape, hung by equal threads, with centers of oscillation at equal distances from the points of suspension. When these wooden pendulums were filled with equal weights of different substances and vibrated with equal velocity, any subsequent inequality in observed vibration of two pendulums must arise from the only condition which was different, namely, the chemical composition of the substances in the pendulums. Since no inequality was observed, it was concluded that the chemical composition of substances had no appreciable influence upon the force of gravitation.⁵

The botanist endeavors to discover the effects of light upon plant growth and resorts to the experimental method. A glass bell jar is placed over a plant and the growth compared with a plant in a shaded bell jar and another plant without a bell jar. But since the sun heats up the bell jars and the resultant warmth affects growth, it is necessary to shield the jars from the direct rays of the sun. In this way it is possible to exert a considerable degree of control over certain conditions which affect growth.

Experimental psychology began in 1840 with the work of E. H. Weber in sensation. Since then the experimental method has been applied to measuring the will, emotion, desire, feeling, memory, reasoning, attention, association and perception, with notable results.⁶

Sensations are mental processes easily controlled because they are connected with physical stimuli such as light, sound, odor and temperature, which can be readily governed. Taste, for example, is influenced by smell, temperature and touch. Each of these three factors may be controlled. Smell may be practically eliminated by plugging the nostrils with cotton. Temperature and touch may be kept constant by reducing all taste stimuli to liquid form and by maintaining liquids at a constant neutral temperature.⁷ In this way the usual varieties of tastes have been reduced to four elementary forms, sweet, bitter, sour and salt. Indeed, when dealing with sensation the "essence of the experiment has consisted in controlling the physical stimuli which produce sensations, and then observing what alterations appear in the field of consciousness."⁸

Experiments in associational reaction have led to interesting results and practical consequences. Words are exhibited through a slit in a screen, and the subject is asked to state as promptly as he can the idea called to mind by the word. The reaction time is measured and recorded. Many tests of this sort determine the fundamental bias of the subject in favor of certain types of association; for example, simple concrete associations or imaginary and romantic combinations. The prin-

⁵ "Principia," III., vi; and Jevons, *op. cit.*, pp. 443-444.

⁶ Angell, J. R., "Chapters from Modern Psychology," 1912, Ch. III.

⁷ *Ibid.*, p. 84.

⁸ *Ibid.*, p. 90.

ciple is used more or less successfully in criminal procedure. Alienists and specialists in nervous disorders have had considerable success in using this experimental method to elicit information that is ordinarily repressed by the patient.

One of the most promising fields in which the experimental psychologist is working is the field of animal experimentation. The principle of evolution has established the physical continuity of animal and human life, animal experimentation has furnished evidence for the continuity of mental activity. Experimental psychology has demonstrated the important principle that the learning process in animals is by the trial and error method. All children and most human adults still rely on this fundamental process of mental activity. Shy animals as well as tamed ones have been experimented upon by ingenious methods devised by Professors J. B. Watson, E. L. Thorndike and F. P. Porter. These experiments have shown that animals can learn a highly complex reaction in as few trials as human beings and will remember for weeks at a time.

May not a method which has given such brilliant results in a field so closely allied to social science be successfully applied in sociology? It is the purpose of this paper to briefly outline the difficulty and promise of the experimental method for sociology.

NATURAL EXPERIMENTS

Comte conceived of pathological cases as indirect social experiments. Whenever the regular course of a phenomenon is interfered with in any determinate manner, true experimentation takes place, and hence according to this interpretation of experimentation it is not important to have a conscious agent to effect the change. While it may be stated at once that Comte's notion of experimentation in the realm of living things was based upon the limited biological knowledge of his time, his concept of social experiments caused by the action of natural forces upon society has been of considerable suggestiveness for sociology. Under certain natural circumstances physical factors at the basis of social life have been limited, held constant, or the ordinary restraining factors have been removed so that the sociologist need only observe the effects.

Such a natural experiment exists in the Arctic Circle where the Eskimo live an isolated life under conditions of extreme simplicity. Here nature has withdrawn her usual variety of resources in flora and fauna, she has produced a pretty constant color scheme (or rather absence of color), controlled her temperature scale in such a fashion that variation in flora and fauna is repressed, and accomplished the maximum degree of isolation from the rest of mankind. Under these circumstances the struggle for existence is severely simple and the in-

habitants have evolved a remarkable system of adapted ways. The Eskimo, in the course of adapting their architectural methods to the only material at hand—snow—have developed the dome, a most unusual form among primitive peoples. Civilized man cannot better this snow Igloo of the Eskimo and finds it absolutely necessary to adopt other Eskimo ways in the Arctic region.⁹ Other adaptations appear in the form of bone snow spectacles, bone bows and skiffs made of skins. In social life adaptations are seen in the absence of commercialism (due to isolation and lack of surplus), the elementary organization of property, the institution of polygamy (due to the high male death-rate), and the custom of patricide (due to scarcity of food). Here the sociologist may observe the effects upon social life of the elimination of many physical conditions considered fundamental in temperate climes.

Nature has performed an interesting experiment in the effects of isolation upon a people of much higher cultural stage. In the southern Appalachian mountains live over a million people who are the direct descendants of the colonial population of America. Here in these isolated valleys remote from the swarming centers of population, they have clung fast to the colonial culture with its spinning wheel and cumbersome hand loom. New ideas, modern inventions, contemporary science have come to revolutionize the life of the rest of the nation, while these quiet folk, serene in their simplicity, have been oblivious to all the rush and worry of new problems. President Frost, of Berea College, calls them "our contemporary ancestors of the South," and they do indeed reproduce the life of colonial times, constituting a natural experiment in the effects of isolation.

Professor Ross has given us a most interesting picture of China.¹⁰ Here is another great natural experiment, but of another type. A strict family tradition has operated to maintain a static standard of living and offset the usual restrictions on the birth-rate, so that the population multiplies without let or hindrance. The result is seen in a striking example of Malthus's law of population. A positive effect is produced in the survival of a stock unusually resistant to disease. Here is a case in which most of the civilized interferences with the principle of natural selection are non-existent, and a rare opportunity is thus afforded to observe the operation of natural selection upon human subjects on a large scale.

Sociologists are only now becoming aware of the great significance of such "natural experiments" for the development of sociological principle. More of such careful observational studies as Nansen's "Eskimo Life," Ross's "Changing Chinese," and Mrs. Gerard's "The Land Beyond the Forest," to mention a few, are needed to fill in the sterile places of sociological theory with scientific data.

⁹ Nansen, "Eskimo Life."

¹⁰ "The Changing Chinese."

EXPERIMENTATION UPON HUMAN BEINGS

But the sociologist can not rely on natural experiments alone to test his hypotheses. Such experiments are infrequent, they are not easy to recognize, are difficult to observe properly and will probably become more and more infrequent as time goes on, because of the standardizing effects of the spread of a more homogeneous culture over the world.

Have direct experiments ever been performed on groups of human beings by human beings? Have certain circumstances of social life ever been controlled or limited by conscious human interference? These questions have both a historical and a contemporary answer.

It may be stated as a truism that just so soon as the sociologist passes from the method of passive observation to active interference with the determining conditions of a social problem, he begins to encounter a stiffening resistance. The social reformer meets objections and obstacles at every step. All sorts of opposition are met by advocates of minimum wage bills, eugenic marriage laws, compulsory vaccination and child labor bills. The people believe that serious questions of individual rights, personal freedom and moral responsibility are involved. It is felt that, while the subject of experiment in physical science is inert and insensitive matter, in the social field the experimenter is dealing with exceedingly complex units capable of great individual suffering if the experiment should go wrong. There is a popular disposition to withhold or question the sanction for an act which puts in the hands of one person, or of a group, an apparently arbitrary control over the welfare and destiny of other assumedly equal human beings. Ideals of individual freedom and the sanctity of human life have been won after generations of struggle, and are regarded as too precious a heritage to abrogate in instances where the outcome is doubtful. The parent who experimented upon his children by limiting their food, strangely clothing them, or keeping them from school and intercourse with other human beings would soon be investigated and perhaps brought to court by the agent of the Society for the Prevention of Cruelty to Children. Certain acts although practised in a spirit of scientific experimentation are nevertheless considered criminal and their authors prosecuted by agencies which seek to preserve social welfare. One may experiment upon plants or insects without encountering moral objections, but just so soon as human life is experimented upon, society reacts unfavorably, either through its unorganized method of public opinion or through its more systematized agencies.

The line between permissible and forbidden subjects of experimentation is not sharply drawn. Experimentation, even for worthy scientific ends, when it affects the lives of higher animals is censured. In fact, there is now systematic opposition in the form of an organization of anti-vivisectionists. Yet the experimental method has nowhere

made more positive contributions to human welfare than in the field of live animal experimentation. The death rate from diphtheria has been reduced by the use of antitoxin from 80 per 100,000 in 1895, to 17 per 100,000 in 1907. Careful experimentation upon animals has given us the anti-meningitis serum which has reduced child mortality from this distressing disease over 50 per cent. Inoculation of children against tuberculosis is now possible because of experiments upon rabbits and guinea pigs. Experimentation upon dogs has given us the beneficent thyroid treatment for cretinism in children. Inoculation against malaria and bone grafting have been made possible by animal experimentation.¹¹ No harm has been done to social ideals and precious human life has been saved.

Yet in spite of this splendid array of worthy achievements which have reduced the pitiful suffering of innocent little children, there are still indiscriminating individuals who see in all animal experimentation a great moral menace. Such has been the mistaken zeal of these persons in the belief that their efforts are protecting our moral standards, that legitimate and beneficent researches of medical scientists have been hampered.

But where draw the line between experiments on living things and experiments upon human beings? Certainly these cases of animal experimentation are on the border line of moral standards. They form very illuminating illustrations of sincere differences of opinion as to where the end may and may not justify the means. Cases of the "poison squad" method of the military scientists or of other instances in which human individuals voluntarily renounce certain rights and freely submit to experimentation, would seem to grade off into this intermediate region where in connection with live animal experimentation the usual moral standards of the sanctity of life are observed to be border line and uncertain. As a matter of fact, there seems to be a regular evolutionary series of stages in the development of the sanction for experimentation. These stages are related to the character of the subject. The sanction for experimentation on inanimate matter and on plant life is within the personal choice of the scientist, no one questions his right; but just so soon as animal experimentation is reached, particularly in the case of higher animals capable of considerable suffering, the sanction of personal choice is regarded by many people as inadequate; and when human life is reached all people demand that a higher sanction for the act than personal will be obtained.

When individuals freely renounce certain rights and for the benefit of humanity submit to experimentation, society does not feel serious concern and may even recognize their self-sacrifice and heroism. The

¹¹ Chapin, H. D., "What Animal Experimentation Has Done for Children," *Popular Science Monthly*, Jan., 1915, pp. 55-62.

state alone, of human agencies, seems to possess by common consent the social sanction for mandatory interference with the normal lives of persons. Unless the individual voluntarily renounces his personal rights, none but the state may morally and legally take them from him. Society is the only official sociological experimenter. In the past, the sovereign power over human life wielded by the state has more often been exercised by an aristocratic or plutocratic minority than voluntarily and legally delegated by the people to their chosen representatives or executives. History is replete with illustrations of this fact. Tyrannical governments have experimented endlessly and thoughtlessly with the lives and welfare of the people. It is only in recent times that a democratic organization of governments has permitted the people to control legislative experiments upon human life and social welfare.

THE UTOPIAN COMMUNITY EXPERIMENTS

But before considering those social experiments sanctioned and attempted by the state, and always characterized by a certain amount of constraint, it will be well to examine a few cases of local community experimentation in which the elements are simple and the results positive.

The associationists of the early nineteenth century, Owen and Fourier, advocated the establishment of communities organized on a more ideal basis than the society of the time and promulgated broad humanitarian plans for the regeneration of mankind.

Robert Owen was a practical and successful manufacturer and his cotton mills at New Lanark, Scotland, were models of the time for all employers who sought the welfare of their operatives as well as efficient business organization. Owen's unquestioned achievements at New Lanark brought him a world-wide reputation and convinced him of the practicability of putting ideals of social reform into every-day life. He firmly believed that "man's character is formed for him by the circumstances that surround him, that he is not a fit subject for praise or blame, and that any general character, good or bad, may be given to the world by applying means which are to a great extent under the control of human governments."¹² Assuming then that, at bottom, human nature is fundamentally good, it only remained to eliminate the restraining bonds and the demoralizing influences of existing society to attain harmonious social relations in an ideal community. Owen thought that the evils of the capitalistic system were due to the restraining effects of private property, orthodox religion, and the existing institution of marriage.¹³ The remedy for present evils was, therefore, the abolition of these three institutions.

¹² Robert Dale Owen, *Atlantic Monthly*, 1873.

¹³ Lockwood, G. B., "The New Harmony Communities," 1902, p. 63.

It was with full confidence that Owen embarked upon the experiment of putting into practise these social ideals. Early in 1825 he purchased 30,000 acres of fertile land of the Rappite Community at Harmony, Indiana, and rechristened the place New Harmony. There were 3,000 acres of land already under cultivation, fine orchards, eighteen acres of full-bearing vines, a regularly laid-out town of 160 houses with streets at right angles to one another, and a public square with large brick buildings.¹⁴

Founded on the principles of common ownership of property, an unorthodox religion and a simple marriage relation, as Owen understood them, the New Harmony community of 900 souls started on what was to be an epoch-making experiment in the reconstruction of society. Back of the rich natural endowment stood Owen with his generous fortune, ready to assist. But although well supplied with material things and supported by the unfaltering enthusiasm of Owen, the community came to a disastrous end in 1827.¹⁵ The seamy side of human nature appears to have cropped out from the beginning. The community was a very heterogeneous group of persons from many states of the Union. Petty jealousies and quarrels were the constant order of events. One observer writes:

The people in the town continued strangers to each other, in spite of all their meetings, their balls, their frequent occasions of congregating in the hall, and all their pretence of cooperation. From the first time I set foot within this little town of one half mile square, I think there is not one within the range of my observations during my traveling in other towns of the United States, where the same number of persons, living together within such a compass for so many months, and daily and hourly passing and repassing each other, were so perfectly strangers, and void of all personal intimacy with each other's feelings, views, situations and, very generally, names.¹⁶

Witness to this state of affairs is borne by the local newspaper, the *Gazette*, for at one time it makes reference to the fact that, "the most eccentric and violent characters" had left the community. Again it admits that

the principal thing to be contended with is the character formed by a new country. Families have been here collected without any relation to each other's views and peculiarities. Many of these persons, after their arrival, have been deprived of more or less of their property, and a general system of trading speculation exists among them, each one trying to get the best of the other. Confidence can not, therefore, exist among them, and there is an unreasonable spirit of suspicion prevalent. Inexperience in community enterprises is another great obstacle, and education alone can overcome these difficulties.¹⁷

¹⁴ Macdonald's MSS Collection, quoted by Hinds, W. A., "American Communities," revised ed., 1902, pp. 130-131.

¹⁵ Hinds, *op. cit.*, p. 134.

¹⁶ Lockwood, *op. cit.*, p. 165.

¹⁷ Quoted by Lockwood, pp. 168-170.

In the *New Harmony Gazette* of March 28, 1827, the failure of the experiment is acknowledged in these words:

Our own opinion is that Robert Owen ascribed too little influence to early anti-social circumstances that had surrounded many of the quickly collected inhabitants of New Harmony before their arrival here, and too much to the circumstances which experience might enable them to create around themselves in the future. He sought to abridge the period of human suffering by an immediate and decisive step, and the plan was boldly conceived; the failure would only afford proof that the conception in this particular case was not as practical as it was benevolent, in as much as the mass of the individuals at New Harmony were not prepared for so advanced a measure.

In an address at New Harmony Hall on April 13, 1828, Owen said, speaking of the failure of his experiment:

This proves that families trained in the individual system, have not acquired those moral characteristics of forbearance and charity necessary for confidence and harmony; and communities, to be successful, must consist of persons devoid of prejudice, and possessed of moral feelings in unison with the laws of human nature.¹⁸

Other observers concluded that a communistic system such as Owen had devised could not exist unless in a place utterly removed from contact with the world or save with the help of some powerful religious conviction.¹⁹

To the extent in which the institutions of private property, religion, and marriage were eliminated or controlled as constant conditions in the life of New Harmony, we have here a real social experiment. On the assumption that these three fundamental human institutions were actually eliminated or reduced to constant elements, we have experimental proof of the instability of society without them. But granting all this, general conclusions are invalidated by the fact of heterogeneity of population a variable and uncontrolled element in the experiment. The deplorable absence of like-mindedness in New Harmony vitiates any inference as to the ultimate effect upon society of the elimination of these fundamental institutions, unless it be the conclusion that without the unifying discipline of these factors a heterogeneous aggregate of people can not live together in peace and harmony. But this is not a new principle of sociological knowledge.

Charles Fourier (1772-1837), the contemporary of Robert Owen, was also a keen critic of the existing industrial system and placed great stress on the principle of association as a remedy for social injustice. Fourier advocated the reconstruction of society on the lines of small self-supporting cooperative communities called phalanxes. Each association was to be composed of some 1,800 members who worked in harmony with one another for the benefit of the community. Every

¹⁸ Lockwood, *op. cit.*, p. 214.

¹⁹ Hinds, *op. cit.*, p. 135.

worker was to take up a different task at the end of two hours, in order that there might be the spice of variety. Labor was to be paid for in order of the necessity, usefulness and agreeableness of the task. He believed that the proposed reorganization of society would permit all who started productive work at eighteen to retire for a life of leisure at twenty-eight.

Fourier's ideas were accepted with enthusiasm by the inhabitants of Brook Farm in 1844. This interesting community was organized in 1841 by a group of New England idealists—orators, philosophers, poets and transcendentalists. The Rev. George Ripley, founder of the Brook Farm society, proposed "to establish the external relations of life on the basis of wisdom and purity; to apply the principles of justice and love to our social organization in accordance with the laws of Divine Providence; to substitute a system of brotherly cooperation for one of selfish competition; to institute an attractive, efficient and productive system of industry; to diminish the desire of excessive accumulation by making the acquisition of individual property subservient to upright and disinterested uses; and to guarantee to each other forever the means of physical support and spiritual progress."²⁰

The association was founded on a joint-stock proprietorship with capital shares of \$100 each and a guaranty of five per cent. per annum interest return. Although communism in the basic property of the community was not practised, there were common industries, equal wages, a common guaranty of support to all members, their children and family dependents, and housing, food, clothing, and other necessities without charge exceeding a certain amount fixed annually by the members. Education and the use of the library were free to all members.²¹

The aim was to secure as many hours as was practicable from the necessary toil of providing for the wants of the body, that there might be more leisure to provide for the deeper wants of the soul.²²

The testimony of observers seems to be agreed that this association of idealists lived in harmonious relations. It is said that the survivors of Brook Farm long cherished the memory of the few years spent in associative life as the happiest and most profitable they had known.²³

The acceptance of Fourierism in 1844 appears to have come at a juncture in the history of Brook Farm when financial difficulties made the future existence of the experiment problematical. A new constitution was adopted and the society was incorporated by the state legislature. A rather complicated system of government was drawn up and the industrial organization of the community was worked out with

²⁰ Preamble to Articles of Agreement and Association, signed by the Brook Farmers.

²¹ Hinds, *op. cit.*, pp. 231-232.

²² Frothingham's account of Brook Farm, quoted by Hinds.

²³ Hinds, *op. cit.*, p. 231.

typical Fourieristic detail—farming series, mechanical series, domestic series, and so on, each series being subdivided into many groups. For a time there appears to have been a profitable renewal of industrial activity, but the financial problem was still unsettled. Finally, a great disaster, the destruction by fire of the large \$7,000 unitary building, had such a depressing effect upon the members that one by one they lost heart and departed.²⁴ The experiment was brought to a close in 1847 after six years of harmonious community life.

In many respects the Brook Farm experiment was a complete contrast to the New Harmony experiment. In the one, harmonious relations were enjoyed for six years by a small group of like-minded and highly cultured people who, however, failed to make their communism a financial success; in the other, friction and lack of harmony existed from the first among the heterogeneous aggregate, and although the financial backing was adequate and generous, the experiment came to a disastrous end in two years. It is difficult to draw any general conclusions from the Brook Farm experiment which will be sufficiently definite to have sociological value. The one outstanding fact, however, seems to be that like-mindedness is sometimes a more fundamental condition of community survival than material endowment. But here again, local experimentation has established no new sociological principle.

The most successful experiment in Fourieristic principles was the North American Phalanx organized August 12, 1843, near Red Bank, Monmouth County, New Jersey, and continuing with considerable prosperity for thirteen years. The New York *Tribune* described the community in 1854 as located on a domain of 673 acres of land, equipped with steam flour and saw-mills, a mansion house, packing house, carpenter's shops and blacksmith's shops. Near the mansion house was a nursery where the children were taken care of while their mothers worked. The inhabitants numbered about one hundred persons. Labor was divided into various departments occupied with fruit drying, the bottling of fruit, the cultivation of potatoes, tomatoes, turnips, melons, cucumbers and garden seeds, the manufacture of wheat, rye, and buckwheat flour, corn meal, samp and hominy. The labor of each person was credited by the hour and charged with board, lodging and other things received from the association. The balance due for excess labor value was paid in cash.

This community weathered many of the preliminary dangers which had broken up other experiments of a similar nature. There were personal difficulties and two parties contended for authority, yet neither of these factors was directly responsible for the final dissolution of the association. As late as August, 1855, a visitor to the phalanx testified

²⁴ *Ibid.*, pp. 233-239.

to the still prevailing spirit of contentment. Yet shortly after this favorable report a difference of opinion arose concerning the location of a new mill and when the question was put to vote the majority was found to be in favor of dissolving the community.²⁵

The causes of the dissolution seem to have been various: among the chief of them was lack of educational facilities, a secession of some of the members, the burning of the mill, and dissatisfaction about the return paid for labor. It appears that there was not sufficient distinction between labor of brain and muscle. The president received only ten cents a day more than a common laborer. It is significant that wage troubles were such an important factor in causing dissatisfaction when it is recalled that the community was established for the very purpose of destroying wealth and income distinctions. Hinds makes this comment upon the fact:

But all this talk about wage troubles, to my mind, only proves that the great objects which originally drew the members together had lost their first power over them, and that lower and more material considerations were becoming dominant in their minds and hearts.²⁶

This community experiment appears to have been well endowed materially and not to have suffered much from internal dissension. What was the cause of its failure? It would seem from the foregoing enumeration of causes that the most potent factor was lack of isolation from the disturbing influences of outside society. It should be remembered that all of these community experiments²⁷ were carried on in a social medium, and that the guiding motives of life in surrounding society, the prejudices, the customs, the laws, the forces and various principles of elemental human nature, were uneliminated and troublesome influences. Scientific experimentation under such limited conditions of control was impossible. It was like attempting to conduct a chemical experiment in a bowl of molasses. Consequently the conclusions from such experiments must be qualified by the unsatisfactory control of the experiment.

The condition of isolation so fundamental for successful social experimentation was never actually realized in the utopian community experiments, and it is an open question whether this prime condition can ever be enforced in social experimentation by active human interference. But sovereign states have, however, experimented upon the people without the aid of this important condition. Since the subject is obviously unlimited from the historical point of view, it will be well to confine our analysis to a few typical contemporary cases.

(To be Continued)

²⁵ Hinds, *op. cit.*, pp. 243, 247.

²⁶ P. 248.

²⁷ There were in all twenty-nine Fourieristic communities in the United States with memberships of from 20 to 420 persons, with lands of from 150 to 30,000 acres, and lasting for from six months to thirteen years each. Hinds, p. 224.